

FLOPET

Denne rapport
tilhører



LTEK DOK.SENTER

L.NR. 12483010013

KODE Well 1/9-6 nr 10

Returneres etter bruk

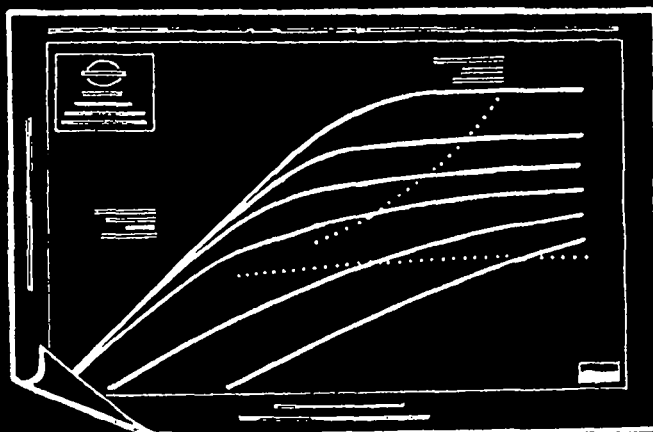
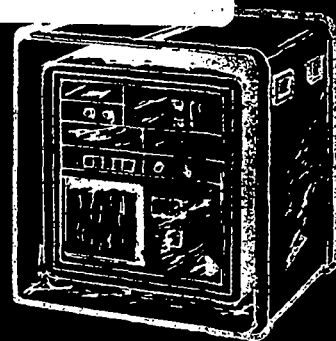
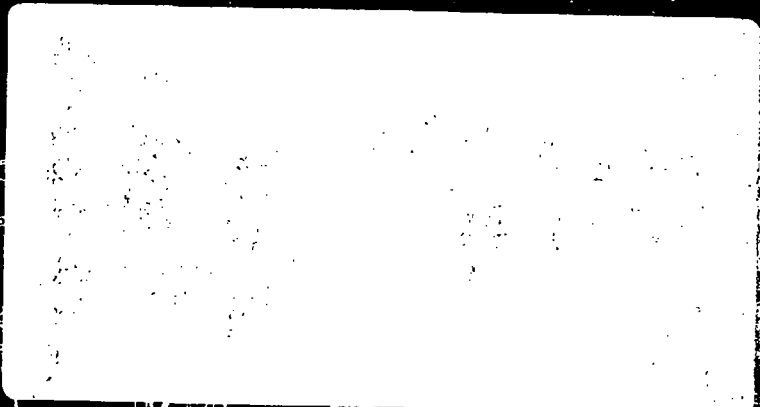
Well Testing Report

PPCoN

Original

Tommeliten Well = 1/9-6

Date = 14.08.82 - 08.09.82



FLOPETROL

Schlumberger

FLOPETROL

DIVISION : NSD

BASE : NOB

REPORT N° : 82/2301/ 24

Well Testing Report

Client : PPCoN

Original

Field : Tommeliten

Well : 1/9-6

Zone :

Date : 14.08.82 - 08.09.82

DST No. 1

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Flopetrol chief operator

Name : F.J.P. Beyer - I. Cooper,
B. Nilssen

Client representative

Name : B. White, J. Stevens.
J. Danielsen

- TEST PROCEDURE -

DST # 1.

The test string was run with Halliburton down hole test tools and Flopetrol EZ-Tree, lubricator valve and flowhead.

After perforating 12374' - 12391', one TPT surface read out gauge and one SDR downhole recorder were run in the hole and landed in the tailpipe below the perforated anchor.

The well was then opened for an initial 15 min flow period, the returns measured in the gauge tank, and then shut in at the choke manifold for a 240 min initial shut in period.

After this the downhole gauges were pulled and the well opened for a 2nd flow period of 151 min, and then shut in for 157 min to build up again.

The 3rd flow period was 10 min followed by a 107 min shut in period.

The 4th flow period was 5 min followed by a 198 min shut in period.

The 5th flow period was 92 min followed by a 35 min shut in period.

The well was then opened for 235 min during which triple bottom hole samplers were run.

The formation was tried fractured by pumping down the tubing, but proved unsuccessful as production did not increase notably.

The last flow period after frac. was 235 mins before the string contents were reversed out and water samples taken.

FLOPETROL

Client : PPCoN

Section :

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Base : NOB

Field : Tommeliten

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Well : 1/9-6

Report No: 82/2301/24

— MAIN RESULTS — DST No. 1

Tested interval : WATER Perforations : 12,374' - 12,391'

Operation	Duration	Bottom hole pressure	Well head pressure	Water Cumulative	Gas prod. rate	G.O.R.
Units	min	psia	psig	BBLS		
Initial Static	-	7602.5	2545	-	-	-
Initial Flow Period	15	5023.8	<50	3.17	-	-
Initial Build-up	240	6878.8	1835	-	-	-
2. flow	151	N/A	<50	7.00	-	-
2. shut in	157	N/A	1470	-	-	-
3. flow	10	N/A	<50	8.71	-	-
3. shut in	107	N/A	1265	-	-	-
4. flow	5	N/A	<50	10.03	-	-
4. shut in	198	N/A	1550	-	-	-
5. flow	92	N/A	<50	12.81	-	-
5. shut in	35	N/A	N/A	-	-	-
Sampling flow	266	N/A	<50	18.67	-	-
After Frac flow	235	N/A	<50	20.46	-	-

Depth of bottom hole measurements : 12304.51' Reference : RKB

Temperature : 271.3°F at : 12304.5' depth

Separator gas gravity (air : 1) at choke size : N/A

STO gravity at choke size : N/A

BSW : N/A Water cut : N/A

REMARKS AND OTHER OPERATIONS

Above stated values are those last measured from each period.
All returns are water cushion.

Base NOB

Field : Tommeliten

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Well : 1/9-6

Report No : 82/230124

- OPERATING AND MEASURING CONDITIONS -A - TYPE OF GAUGE -BOTTOM HOLE :Pressure : T.P.T./SSDR
Temperature : T.P.T./SSDRWELL HEAD :Pressure : D.W.T. 50-10000 psi
Temperature : Foxboro Temp elementSEPARATOR :Pressure : Barton Press Element 0-1500 psig
Temperature : Barton Temp Element 0-180°FB - PRODUCTION RATE CONDITIONS AND SOURCES -OIL PRODUCTION RATE

N/A	<input type="checkbox"/> Tank	→	<input type="checkbox"/> Floco	Reference conditions.	<input type="checkbox"/> Separator	Shrinkage measurement.
	<input type="checkbox"/> Meter		<input type="checkbox"/> Rotron		<input type="checkbox"/> Atmospheric pressure 60 F	
	<input type="checkbox"/> Dump				<input type="checkbox"/> With tank	
	<input type="checkbox"/>				<input type="checkbox"/> With shrinkage tester	

GAS PRODUCTION RATE

N/A	<input type="checkbox"/> Orifice meter	Standard conditions.
	<input type="checkbox"/>	

WATER PRODUCTION RATE

Tank
 Meter

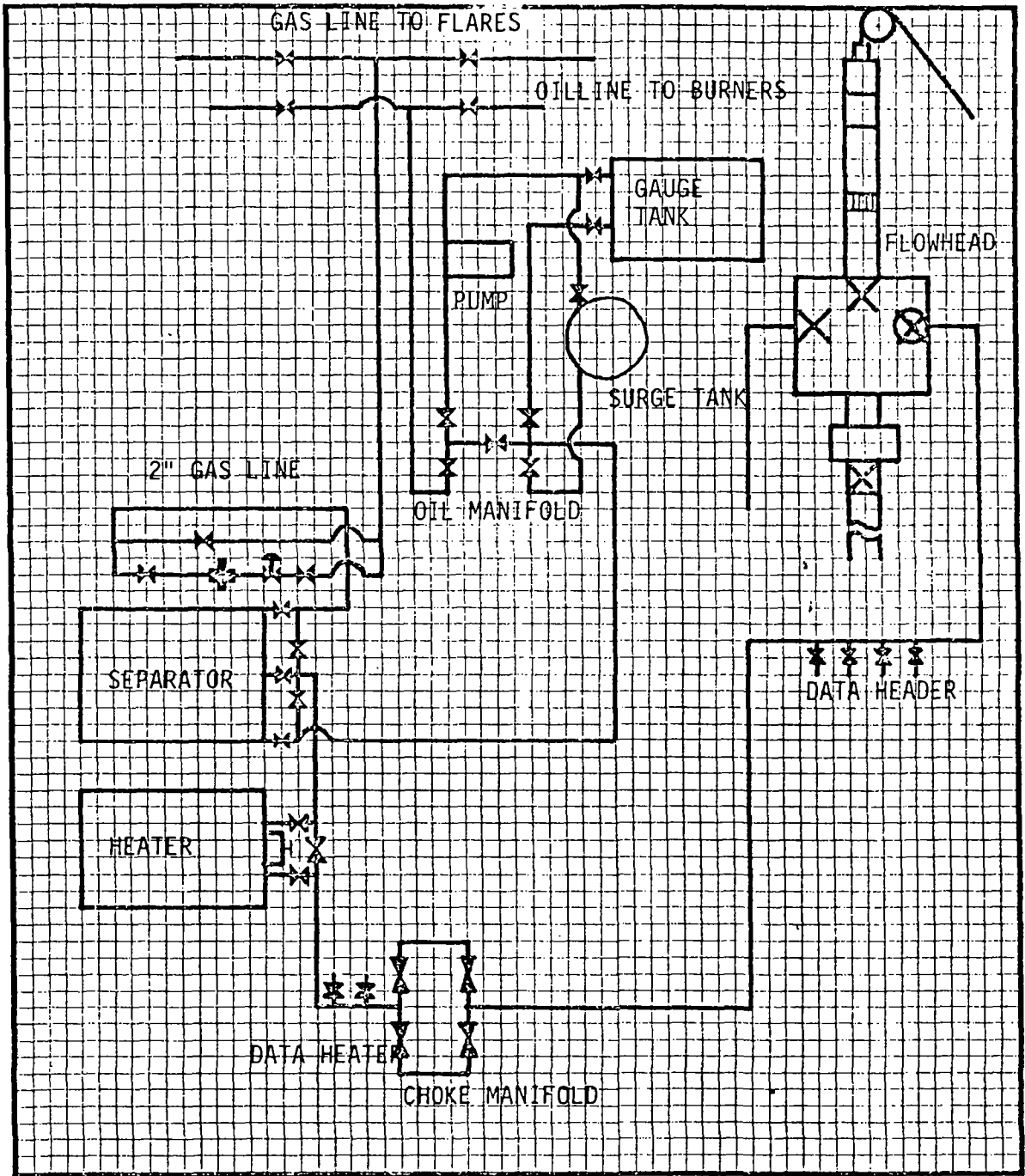
C - WELL DATA -WELL STATE DURING SURVEY :

Well producing through : _____ tubing/~~drill pipe~~/casing
 Main casing size 7" set at ± 12700' Total well depth _____
 Tubing size 5" VAM set at 12333.27' Packer R.T.T.S set at 12243.26'
 Perforations :
 -Zone D.S.T.1 From 12374' to 12391' From _____ to _____
 -Zone _____ From _____ to _____ From _____ to _____
 -

WELL STATE BEFORE TEST : NEWLY DRILLED WELL

Well closed since _____
 Well flowing since _____ Producing zone _____
 Choke size _____

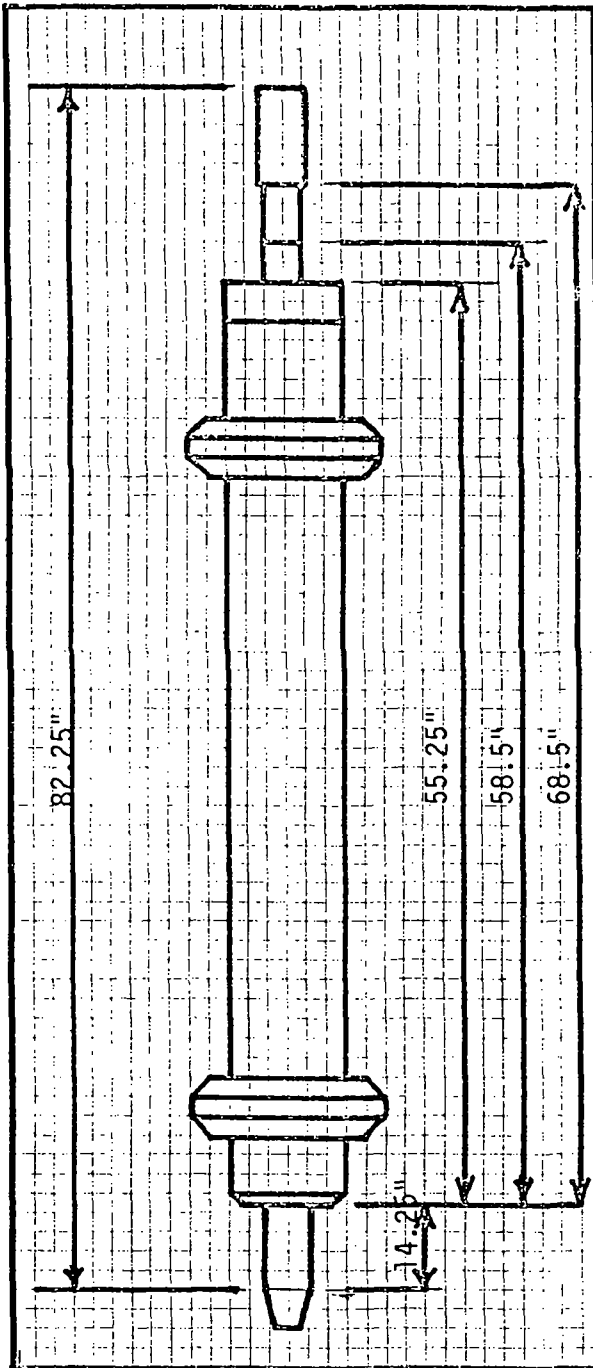
- SURFACE EQUIPMENT LAYOUT -



REMARKS :

SCHEMATIC ONLY
NOT TO SCALE

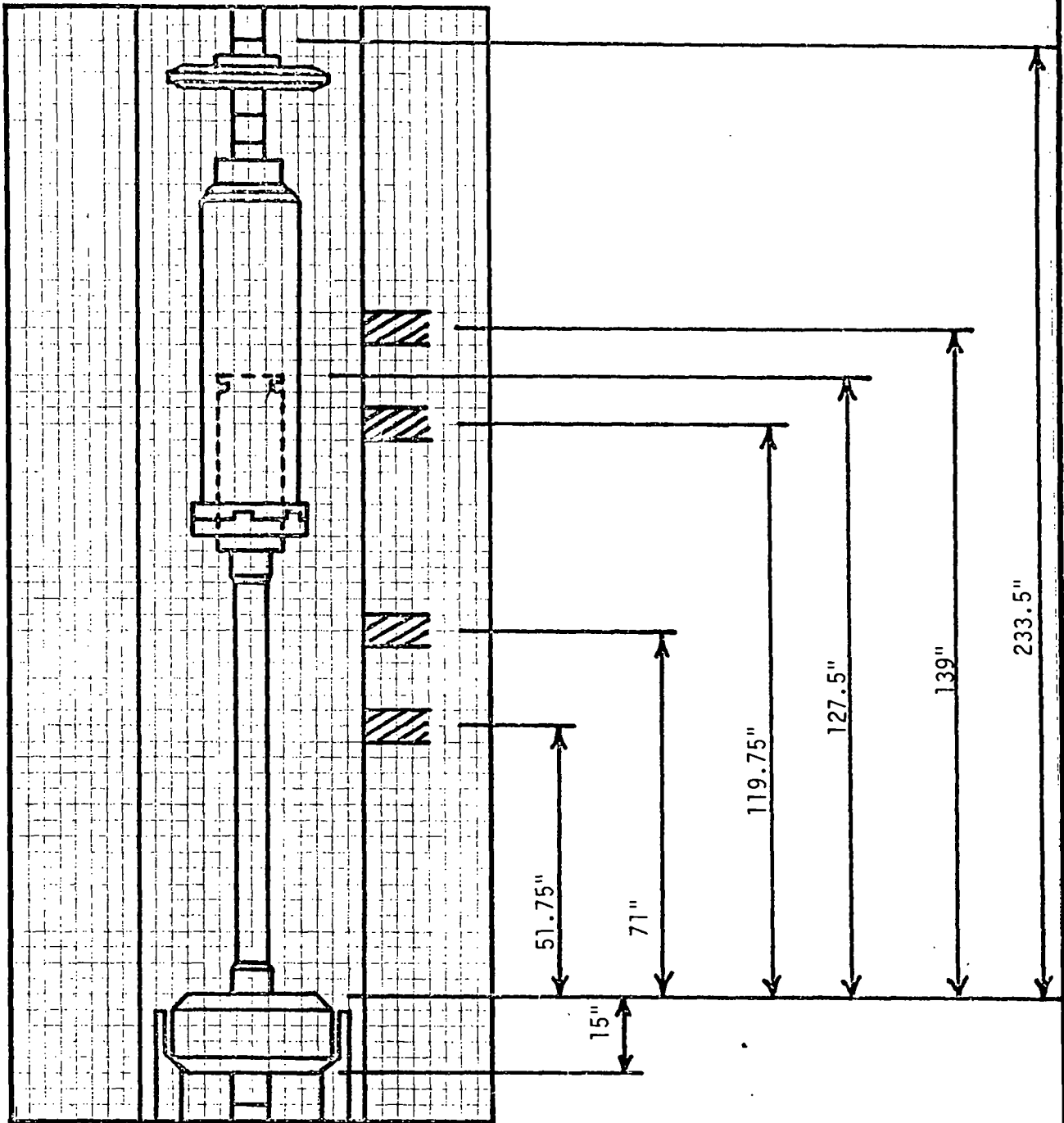
- WELL COMPLETION DATA -



REMARKS :

Lubricator valve

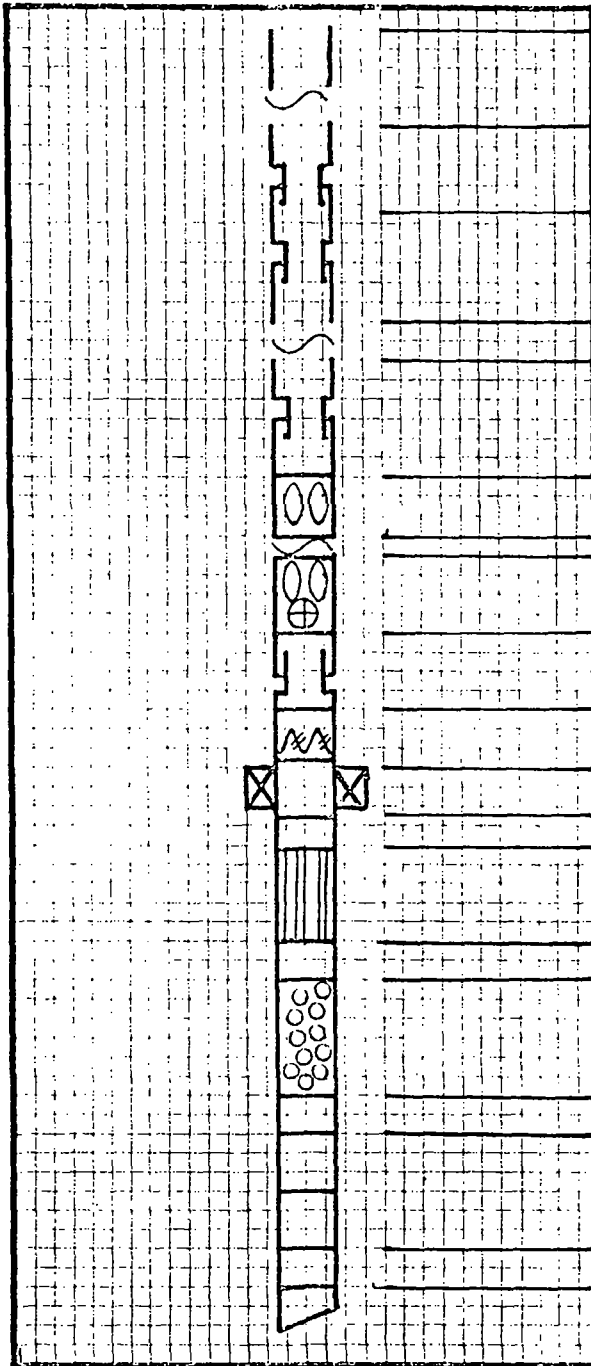
- WELL COMPLETION DATA -



REMARKS :

DRAWING SCHEMATIC ONLY
NOT TO SCALE
EZ-TREE ASSEMBLY

WELL COMPLETION DATA



257 JTS 5" VAM TBG.

100 JTS 3 1/2" VAM TBG.

Slip Joint

Slip Joint

12 JTS 4 3/4" DC

Slip Joint

APR-A Valve

3 JTS 4 3/4" DC

APR-M Valve

JARS

Safty Joint

RTTS Packer

X-over

Bundle carrier

X-over

Perforated anchor

X-over

2 JTS 3 1/2" DP

X-over

Wireline Re-entry guide

REMARKS :

DRAWING SCHEMATIC ONLY
NOT TO SCALE

FLOPETROL

Client : PPCoN

Section : 6

Base : NOB

Field : Tommeliten

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Well : 1/9-6

Report N°: 82/2301/2

SEQUENCE OF EVENTS

DATE	TIME	OPERATION
14.08.82	14:00	Flopetrol crew arrive on rig.
		Pressure test EZ-tree to 7000 psi body and valve R.I.H. for space out. Did not pass 14" "flex joint fluted hanger 16.5
		Pull flex. joint.
		Re-run tree for space-out OK.
		Repair 3" mapegaz valve on 2" Daniel manifold.
15.08.82		Pressure testing flowhead, body and valves, 7000 psi.
		Repair pilots on burner heads and hook up air compressor to both burners.
		Check calibration on both Barton and Foxboro's.
16.08.82	06:54	EZ-tree in string.
	07:00	EZ-tree through rotary.
	07:49	Lubricator valve in string.
	08:03	Lubricator valve through rotary.
	08:25	Pick up flowhead.
	10:00	Flowhead rigged up with wireline BOP on top.
	10:38	Close mastervalve
	10:40	Close choke manifold
	10:41	Start pressure test surface equipment
	10:49	Leak on chicksan in kill line
	10:55	Start pressure test again after repaired leak. Pressure test OK. 7000 psi.
	12:05	Close kill line valve for test 7000 psi. OK.
	12:06	Open Kill Line Valve
		Close fail safe actuator valve
		Open master for testing string to APR-N.

N: DOP 107

FLOPETROL

Section : **6**

_ SEQUENCE OF EVENTS _ (Continuation)

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Report N: 82/2301/24

DATE	TIME	OPERATION
16.08.82	12:50	Test OK. Did not bleed off.
	13:00	Close EZ-tree valve. Bleed back to 500 psi. Test good.
	13:15	Press up string. Open EZ-tree valve close lub. valve. Bleed back to 500 psi. Press up to 7000 psi to open lub. valve.
	13:24	Close master Valve. Test to 7000 OK.
	13:36	Open master valve. Bleed off.
	13:50	Trying to set packer. Problem with swivel.
	15:10	Set packer.
	15:47	Pressure test to inlet of heater to check changed lines (Flow). 5000 psi OK
	16:10	Changed Halliburton chocks due to leak. Closed in at choke 7000 psi OK.
	17:30	Test low flow gas bypass valve at 1000 psi OK.
	17:46	Master valve open
	17:46	Finish pressure testing
	17:50	Pressure up annulus.
	17:51	Pressure at 1700 psi
	17:54	Close lub. valve. Start to rig up Schlumberger perforating tools. Cable damaged. Rig down wire line tools.
	19:00	Rig up Foxboro and D.W.T. on rig floor.
	22:50	Start to rig up perforating equipment. Cable damaged again. Rig down.
17.08.82	00:30	Start to rig up perforating tools.
	01:56	Finish rigging up
	02:06	Start pressure test wireline equipment.
	02:23	Finish pressure test
	02:30	Close kill valve.
	02:30	Open lubricator valve
	02:34	Start to run in hole with perforating guns

FLOPETROL

Section : **6**

SEQUENCE OF EVENTS (Continuation)

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Report N: 82/2301/24

DATE	TIME	OPERATION
17.08.82	02:48	Schlumberger shut down winch. Waiting for another operator.
	06:15	Continue to run in hole with perforating guns.
	06:24	Open failsafe valve.
	06:27	Open choke manifold.
	10:00	Could not reach depth. Start POOH with perforating guns.
	11:37	Close lubricator valve
	11:59	Guns out of hole
	13:00	Make up W-L string for dummy run.
	13:15	W-L string in hole.
	13:20	Open lubricator valve
	13:30	Start RIH
	14:45	Could not reach depth. POOH.
	15:21	Close lubricator valve.
	15:32	Tools out of hole.
	15:35	W-L string on cat walk.
	15:39	Close swab valve.
	15:50	Rig down DWT, Foxboro
	16:05	Check that: Kill line closed, swab valve closed, failsafe opened.
	16:20	Put fusible cap on failsafe piston, bleed of pressure, take hose off.
	16:21	Open lubricator Valve
	16:24	Start trying to open RTTS circulating valve.
	17:10	APR-M opened, open choke manifold, by pass to flare, start reverse circulation.
	18:00	Cement plug back.
	19:55	Finish reverse circulating
	20:00	Open kill line, close flow line.
	20:06	Start displacing string with sea water

FLOPETROL

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SEQUENCE OF EVENTS (Continuation)

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Report N: 82/230/24

DATE	TIME	OPERATION
17.08.82	21:00	Finish displacing
	21:07	String landed to close RTTS circulating valve attempt to bleed off string pressure.
	21:11	RTTS circ. valve not closed. Packer probably unset.
	21:21	Pick back-up, start rotating to set packer.
	21:32	Packer set but still could not bleed off differential pressure.
	22:03	Picked up string to check packer set.
	22:15	Packer set APR-M probably sheared.
	22:38	Close fail safe.
	23:10	Start rigging down, disconnect flow head.
18.08.82	00:30	Lubricator through rotary.
	01:43	EZ-tree through rotary
	01:50	EZ-tree back in derrick.
		- Continue to pull test string.
		- Change crossovers on EZ-tree, lub. valve and flowhead to 5" vam.
19.08.82	08:30	Start to run in hole with tubing test string.
	09:00	Pressure test EZ-tree to 7000 psi.
	12:15	Pressure test lubricator from top and bottom against ball to 7000 psi.
	14:30	Pressure test flow head against swab, kill, failsafe and master valve top. 7000 psi.
		Prepare equipment for test.
20.08.82		Maintaining equipment
21.08.82		Maintaining equipment
22.08.82		Maintaining equipment
23.08.82		Maintaining equipment
24.08.82		Hetlevik, Haslums, Engabakken, Bakker arrive rig.
25.08.82		Maintaining equipment.

FLOPETROL

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SEQUENCE OF EVENTS (Continuation)

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Report N: 82/2301/24

DATE	TIME	OPERATION
26.08.82		Porsedal, Andbo arrive rig. Checking out equipment for test.
27.08.82		F. Beyer, R. Martin depart rig. Ian Cooper and Pedersen arrive rig. Checking over equipment.
28.08.82		Øivind Skagen, A. Rønne arrive rig. G. Weyer and Gehin depart rig. Checking equipment for test.
29.08.82	04:40	EZ-tree made up to test string.
	05:00	Unlatch EZ-tree.
	05:10	Relatch
	05:15	Pressure test hose connections. EZ run in hole.
	06:10	Lubricator valve made up to test string.
	06:25	Torque up connections on lubricator.
	06:40	Lubricator valve through rotary table.
	06:45	Commence changing bails.
	07:25	Flow head in mouse hole.
	07:45	Rig up wire line lubricator and BOP.
	08:10	Rig up flow and kill lines to flow head.
	08:15	Flow head made up to test string.
	08:24	Test string landed
	08:53	Master, kill, failsafe valves open, Swab valve closed.
	08:55	Flush through for pressure testing.
	09:03	Failsafe valve closed
	09:07	Pressure test string to 7000 psi.
	09:35	Test good. Close EZ-tree valve.
	09:36	Bleed pressure off above to 500 psi. Test EZ-tree
	09:45	Test good. Pressure equalized.
	09:46	EZ-tree valve open
	09:47	Lubricator valve closed
	09:49	Bleed pressure off above to 500 psi. Test lubricator valve.
	09:55	Test good. Pressure equalized. Open lubricator valve.

FLOPETROL

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SEQUENCE OF EVENTS (Continuation)

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DATE	TIME	OPERATION
29.08.82	10:02	Close master valve. Bleed pressure off above to 500 psi.
	10:13	Test good. Pressure equalized open master valve
	10:14	Pressure bleed off.
	10:18	Pick up string to space out and set packer
	10:36	Set packer
	10:44	Open failsafe, close master valve. Flush lines
	10:48	Close choke manifold
	10:50	Pressure test to 7000 psi against choke manifold.
	11:05	Pressure not holding. Pressure back up.
	11:10	Pressure bleed off. Leak at connection on rig flow line.
		Repair.
	11:25	Flush line. Pressure test to 7000 psi.
	11:28	Pressure bleed off. Tighten union more.
	11:30	Pressure back up to 7000 psi.
	11:40	Test good. Commence moving bails on flow head to lubricator.
		tor.
	11:55	Close down hole lubricator open master valve
	12:07	Swab valve open.
	13:18	Schlumberger rigging up for dummy run.
	13:25	Pressure test lubricator to 5000 psi
	13:50	Open down hole lubricator.
	14:00	Commence dummy run.
	15:30	Reached 11540' unable to go down. String pressure 700 psi.
		Bled it off. Try to go down.
	16:00	Reached 12026'. Unable to go down. Trying to go through.
	16:30	Pressure up string to 5000 psi, then bled pressure off.
	16:55	Pull out. Stuck at 11647' X-over above slip joints.
	17:12	Through X-over.
	17:15	Stuck at 11583'
	17:40	Pull out free with wire.

FLOPETROL

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_ SEQUENCE OF EVENTS _ (Continuation)

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DATE	TIME	OPERATION
29.08.82	19:35	Kill valve closed
	20:00	Wire-line with dummy to surface.
	20:05	Lubricator valve closed
	20:15	Wire-line tools rigged down
	20:25	Kill valve open flowhead, swab valve closed
	20:30	Lubricator valve open
	20:40	Pick up string to try and open RTTS circulating valve.
		Unable to open valve.
	21:35	Try to open RTTS circulating valve.
	21:45	Unable.
	22:45	Close failsafe valve. Shear A.P.R.M. circulating valve.
		Open kill valve commence reverse circulation.
	23:30	Rig down flow line
30.08.82	02:25	Stop circulating
	02:35	Rigging down flow head
	03:20	Commence pulling out of hole.
	03:25	Lubricator valve through rotary.
	03:40	Lub. valve rigged down. Commence p.o.o.h. with test string.
	04:30	EZ-tree rigged down
	04:50	Commence pulling out of hole with test string. Preparing equipment for test.
	13:00	Flush lines. Flow directed into separator for meter factors. Halliburton pumping approx. $\frac{1}{2}$ BBL/min through 1" water line 25 BBLs through meter. 100cm into tank =
		100cm x .264 = 26.4 BBLs meter factor = 1.056. 1 BBL/min
		through 2" oil line 34 BBLs through meter. 131 cm into tank = 131cm x .264 = 34.584 BBLs meter factor = 1.017.
		3 BBLs/min through 3" oil line 30 BBLs through meter.
		106 cm into tank = 106cm x .264 = 27.984 BBLs meter factor
		= .933. Pressure test flow head with grease injection on.

FLOPETROL

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_ SEQUENCE OF EVENTS _ (Continuation)

Page : 16
Report N: 82/2301/24

DATE	TIME	OPERATION
31.08.82		Checking over equipment
		K. Randeberg, S. Haslum depart rig. Bill Siersdorfer and R. Christensen arrive rig.
01.09.82		Pressure test EZ-tree and lubricator valve again. Check over test equipment
02.09.82		Pressure test spare lubricator valve. Check over test equipment.
03.09.82	03:00	EZ-tree picked up
	03:30	Hoses connected and pressure tested
	03:40	EZ-tree through rotary
	04:20	Lubricator valve picked up
	04:40	Lubricator valve through rotary
	05:10	Flowhead picked up
	05:35	Wireline lubricator B.O.P. rigged up to flow head
	06:00	Flow head made up to test string
	06:15	Land string in wear bushing
	06:45	Rig up hoses for failsafe, grease injection and wireline
		B.O.P. Rig up kill and flowlines, master, swab valves closed, kill and failsafe valve open.
	06:54	Flush lines to gas flare
	07:05	Pressure test to 3000 psi at choke manifold
	07:20	Leak on 2" chicksan replace and pressure up again.
	07:40	Test good. Close failsafe. Pressure test to 3000 psi
	07:50	Close kill valve. Open failsafe. Pressure test kill valve.
	08:05	Close failsafe. Open master and kill valves
	08:06	Commence to displace tubing with water.
	09:20	Displacing complete.
	09:23	Close master valve. Pressure above bled off
	09:25	Closet kill valve.

FLOPETROL

Section : **6**

SEQUENCE OF EVENTS -(Continuation)

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Report N: 82/2301/24

DATE	TIME	OPERATION
03.09.82	09:27	Pick up string to set packer
	09:35	Land in wear bushing
	09:41	Kill valve open. Pressure equalized across master valve.
	09:43	Open master valve
	09:45	Pressure test string to 3000 psi against packer. Leaking.
	10:00	Pick up to reset packer.
	10:05	Land off string
	10:06	No indication packer is set. Communication.
	10:15	Pick up to reset packer
	10:20	Land off string
	10:35	No positive indication. Still communication.
	10:43	Pick up to reset packer
	10:46	Land off. No indication. Still communication.
	10:48	Pick up to reset packer.
	10:57	Land off. No indication. Still communication.
	11:10	Pick up to reset packer
	11:13	Land off string. Communication tubing/annulus.
	12:05	Pick up to reset packer
	12:20	Packer set to high. Check for communication. Still communication tubing/annulus.
	12:30	Pick up string to reset packer.
	12:37	Packer set. Still communication
	13:23	Close kill valve.
	13:24	Pressure bled back to Halliburton unit.
	13:30	Pick up string 60' to set packer.
	13:33	Land string. Communication still between tubing and annulus
	13:42	Pick up 40'
	13:48	Set packer
	13:50	Still communication
	14:05	Open kill valve to U tube string with mud

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SEQUENCE OF EVENTS (Continuation)

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Report N°: 82/2301/24

DATE	TIME	OPERATION
03.09.82	15:15	Rig down one single below flow head
	15:27	Unseat packer.
	15:28	Land string in wear bushing
	15:31	Close rams
	15:36	Commence reversing to fill string with mud.
	16:40	Reversing complete
	17:02	Open rams. Pick up to set packer
	17:15	Land off. Packer set
	17:30	Still communication between tubing and annulus.
	17:35	Pick up to reset packer.
	17:45	Packer set. Still communication. Rigging down flowlines.
	18:40	Flowhead rigged down. Pull out of hole.
	19:10	Lubricator rigged down. Pulled out of hole.
	20:05	EZ-tree rigged down.
04.09.82		Pressure tested flowhead valves and body to 5000 psi, OK.
05.09.82	15:14	EZ-tree in elevator
	15:43	EZ-tree made up to tubing
	16:01	Function tested EZ-tree, unlatch/latch.
	16:04	Opened ball and flapper valves.
	16:10	EZ-tree through rotary table
	16:36	Lubricator valve in elevator
	16:41	Lubricator valve made up to tubing.
	16:45	Function test lubricator valve.
	16:50	Lubricator valve through rotary table.
	17:10	30' bails on.
	17:20	Flowhead in mouse hole.
	18:10	Flowhead made up to tubing.
	18:15	Test string landed off.
	18:40	Flowline and kill line made up.
	18:50	Flushed lines to flare

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Section : **6**
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SEQUENCE OF EVENTS (Continuation)

DATE	TIME	OPERATION
05.09.82	18:54	Pressure test choke manifold to 3000 psi.
	19:12	Pressure test good. Close fail safe valve. Bleed off downstream.
	19:30	Pressure test good. Close kill valve. Open fail safe valve.
	19:50	Pressure test good.
	19:54	Close fail safe valve. Open kill valve. Open master valve.
	19:56	Start to displace tubing with water.
	23:20	Finish displacing.
	23:35	Pick up and rotate to set packer
	23:41	Land off in wear bushing.
	23:45	Pressure test tubing against packer to 3000 psig.
06.09.82	00:05	Pressure test ok. Bleed off pressure
	00:35	Pressurize string to 3000 psi and close EZ-tree valve. Bleed back to 500 psi. above.
	00:45	Equalized pressure and open EZ-tree valve.
	00:50	Closed lubricator valve and bleed off to 500 psi above.
	00:55	Equalized pressure and opened lubricator valve.
	01:00	Closed master valve and bled off to 500 psi above.
	01:12	Equalized pressure and opened master valve. Closed kill valve.
	01:25	Opened kill valve.
	01:27	Pressurize string to 3000 psi and closed EZ-tree valve. Bled off to 500 psi above. Previous tests only bled back to 2500 psi.
	01:35	Equalize and open EZ-tree valve.
	01:36	Closed lubricator valve and bled off to 500 psi above.
	01:42	Equalize and open lubricator valve.
	01:45	Closed master valve and bled off to 500 psi above.
	01:55	Equalize and opened master valve. Bled off pressure.

FLOPETROL

Section : **6**

_ SEQUENCE OF EVENTS _ (Continuation)

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Report N: 82/2301/24

DATE	TIME	OPERATION
06.09.82	02:04	Open swab valve.
	02:15	Close lubricator valve.
	02:30	Schlumberger start rig up for perforations.
	04:40	Gun in lubricator.
	04:50	Pressure test lubricator to 1000 psi
	05:10	Test OK. Bled off.
	05:15	Opened lubricator valve.
	05:17	Start to run in with guns.
	07:37	Start logging
	09:05	Fire guns: 12374' -12391'. Observing wellhead pressure.
	10:10	Perforating guns out of hole.
	10:25	Closed lubricator valve and bled off pressure. Disconnected
		wireline head. Tool stuck. Reconnect wireline head and
		put tension (1000 lbs) on wire. Cable pulled out of rope
		socket.
	11:10	Well flowing over lubricator. Close swab valve.
	11:40	Close EZ-tree valve. Observing pressure.
	12:15	843 psi.
	12:25	980 psi
	12:35	1110 psi
	12:45	1210 psi
	13:04	Open kill valve
	13:09	Bled off pressure to Halliburton unit.
	13:25	Close choke manifold. Open fail safe valve close kill
		valve.
	15:20	Rigged up for wireline run with impression block.
	15:22	Open swab valve. Run in hole.
	15:30	Pull out of hole
	15:35	Impression block out of hole.
	15:36	Make new run with impression block

FLOPETROL

Section :

6

SEQUENCE OF EVENTS (Continuation)

Page : 21
Report N: 82/2301/24

DATE	TIME	OPERATION
06.09.82	15:40	Out of hole
	16:30	Rig up for wireline with fishing tool
	16:35	Latch on to fishneck
	16:52	Wireline head connected
	16:58	Open lubricator valve.
	17:20	Fish on surface. Close lubricator valve.
	17:35	Replace leaking chicksan swivel.
	17:43	Close swab valve, close master valve, Open fail safe valve.
		Open choke manifold.
	17:46	Open kill valve. Close lubricator valve.
	17:54	Flush through to gas flare.
	18:12	Pressure test 3000 psi against choke manifold.
	18:15	Start to rig up for wireline with bottom hole gauges.
	18:50	Open master valve
	18:53	Open lubricator valve to check for pressure build up.
	19:26	Close lubricator valve
	19:46	Gauges in lubricator
	20:04	Wire line head connected
	20:12	Pressure test lubricator to 1200 psi
	20:30	Open lubricator valve
	20:35	Open EZ-tree
	20:40	Run in hole with gauges, close kill valve.
	22:45	Gauges on measuring depth 12304.5'
	23:10	Open up well for initial flow through 8/64" adjustable choke to gauge tank.
	23:11	Adjust choke to 20/64"
	23:12	Adjust choke to 24/64"
	23:20	Adjustable choke fully open 128/64"
	23:25	Close in for initial build up at choke manifold. Total cushion flowed back 3.17 BBLs

FLOPETROL

Section : **6**

SEQUENCE OF EVENTS (Continuation)

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DATE	TIME	OPERATION
07.09.82	03:25	Finish initial build up start POOH with gauges - 4 gradient stops.
	03:34	Gradient stop for 10. min at 11750'. CCL ref.
	03:51	Gradient stop for 10. min at 11285'. CCL ref.
	04:07	Gradient stop for 10. min at 10785'. CCL ref.
	04:22	Gradient stop for 10. min at 10285'. CCL ref.
	04:32	P.O.O.H. with gauges
	05:51	Gauges in lubricator
	05:55	Close EZ-tree
	05:58	Bleed off at choke to gauge tank. Left tank.
	06:06	Stuffing box off grease tube.
	06:10	Close lub. valve
	06:34	Open lub. valve
	06:58	Open kill valve. Pressure up with Halliburton pump to open EZ-tree.
	07:10	Close kill valve
	07:15	Open up well at adj. choke 8/64" increase gradually. Flow to gauge tank.
	09:46	Shut in at choke manifold.
	12:33	Opened well through 12/64" adjustable choke. Gradually increasing to 24/64"
	12:44	Shut in at choke manifold
	14:35	Open up well through 24/64" adjustable choke, gradually increasing to 30/64"
	14:40	Shut in at choke manifold
	17:58	Opened up well through 24/64" adjustable choke, gradually increasing to 30/64"
	18:56	Clock on bottom sampler (4 hrs)
	18:58	Clock on middle sampler (4 hrs)
	19:17	Clock on top sampler (4 hrs)

FLOPETROL

Section : 6

SEQUENCE OF EVENTS (Continuation)

Page : 23
Report N: 82/2301/24

DATE	TIME	OPERATION
07.09.82	19:30	Closed EZ-tree and lubricator valves.
	19:40	Samplers in lubricator.
	19:50	Close failsafe and open kill valve.
	19:51	Open lubricator valve. Pump down with Halliburton to make sure EZ-tree open.
	20:00	Run in the hole with samplers.
	20:05	Close kill valve. Open failsafe and flow well on 30/64" adj. choke.
	23:32	Start pooh with samplers.
08.09.82	00:25	Samplers in lubricator.
	00:31	Closed EZ-tree.
	00:37	Pick up lubricator.
	00:39	Closed lubricator valve.
	01:00	Start bleed off sampler into bottles.
	02:08	Finish bleed of sampler. Lower sample CL ⁻ = 22000 ppm P.H. 6.5 R _f .252. Middle sample CL ⁻ = 67000 ppm P.H. 6.5 R _f .098. Upper sample CL ⁻ = 77000 ppm P.H. 6.5 R _f .089.
	02:36	Closed swab valve
	02:37	Closed choke, fail safe.
	02:38	Open kill line.
	02:46	Open lubricator valve
	02:49	Open sub sea tree.
	02:50	Start pumping for frac. job.
	04:20	Finish pumping. No frac.
	04:25	Closed kill valve, open fail safe.
	04:30	Open choke on 128/64" adj.
	08:25	Closed failsafe open kill valve.
	08:36	Closed kill valve, line up to STB burner boom.
	08:42	Open fail safe
	08:45	Open APR-M valve, displacing the string with mud.

FLOPETROL

Client: PPCo Norway

Field: Tommeliten

Well: 1/9-6

Section: **7**

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Report N: 82/2301/24

- WELL TESTING DATA SHEET -

Base: NOB

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				PROD. RATES AND FLUID PROPERTIES				GOR
Time HRS	Cumul MIN	BOTTOM HOLE		WELL HEAD		SEPARATOR		Rate	OIL OR CONDENSATE		GAS		Units	
		Temp	Pressure	Tg temp	Ig press	Cg press	Temp		Press	Gravity	BSW	Rate		Gravity
06:09:22														
09:05	-													
09:10	5													
09:15	10													
09:20	15													
09:25	20													
09:30	25													
09:35	30													
09:40	35													
09:45	40													
09:50	45													
09:55	50													
10:00	55													
10:05	60													

Perforating guns fired. Perforations: 2,374 feet - 12,391 feet.

DST No. 1

TESTED INTERVAL : 12374' - 12391'
 DEPTH REFERENCE : RKB
 DEPTH OF B.H. MEASUREMENTS : 12304.5'

LIQUID FLOW RATE MEASURING CONDITIONS :
 60°F and 14.73 PSIA

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS		WELL HEAD		SEPARATOR		PROD. RATES AND FLUID PROPERTIES					
	BOTTOM HOLE	Pressure	Tg. temp	Ig. press.	Cg. press.	Temp.	Press.	OIL OR CONDENSATE	GAS		GOR	
Time	Cumul							Rate	Rate	Rate	Gravity	Units
HRS./MIN. MIN											Air = 1	
10:05												
10:10	65				995			Perforating guns out of hole				
10:15	70				1040							
10:20	75				1110							
10:25	80				1170							
10:25	-							Closed lubricator valve and bled off pressure above.				
20:35	-							Opened EZ-tree valve.				
20:36	691			36	1975							
20:40	695							Run in hole with gauges close kill valve				
20:45	700			36	1995							
21:00	715			36	2065							
22:15	730			36	2205							
21:30	745			36	2342							
21:45	760			36	2430							
22:00	775			36	2520							
22:15	790			36	2630							
22:30	805			36	2605							
22:45	820			36	2585			Gauges at depth.				

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Section : 7

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS		WELL HEAD		SEPARATOR		PROD RATES AND FLUID PROPERTIES			GOR		
	BOTTOM HOLE	Temp OF	Pressure PSIA	Tg. temp OF PSIG	Ig. press OF PSIG	Cg press.	Temp.	Press.	OIL OR CONDENSATE		GAS	
Time	Cumul	Temp	Pressure	Tg. temp	Ig. press	Cg press.	Temp.	Press.	Rate	Rate	Gravity	Units
HRS/MIN	MIN	OF	PSIA	OF	PSIG						Air=1	
06.09.82												
23:38												
23:39	14	269.6	5047.1		Pressure below 50 psig out of D.V.T. range							
23:40	15	269.6	5056.8									
23:45	20	269.7	5161.8	35	124							
23:50	25	269.9	5303.8	35	269							
23:55	30	270.0	5439.8		403							
24:00	35	270.1	5565.2		527							
07.09.82												
00:05	40	270.3	5675.2		637							
00:10	45	270.4	5775.8		740							
00:25	60	270.7	5867.3		985							
00:40	75				1190							
00:55	90				1315							
01:10	105	271.1	6474.4		1435							
01:25	120	271.1	6562.9		1520							
01:55	150	271.2	6691.8		1645							

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS			PROD. RATES AND FLUID PROPERTIES				GOR
	BOTTOM HOLE	WELL HEAD	SEPARATOR	OIL OR CONDENSATE		GAS		
Time	Temp.	Ig temp.	Ig temp.	Rate	Gravity	Rate	Gravity	Units
HRS	Pressure	°F	PSIG				Air = 1	
10:07								
10:08	22		147					
10:09	23		175					
10:10	24		200					
10:15	29		320					
10:20	34		395					
10:25	39		480					
10:30	44		570					
10:35	49		635					
10:40	54		705					
10:45	59		780					
11:00	64	44	935					
11:15	79		1075					
11:30	94		1180					
11:45	109		1270					
12:00	124		1345					
12:15	139		1405					
12:30	154	45	1465					

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Report N°: 82/2301/24

Section : 7

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS		WELL HEAD		SEPARATOR		PROD. RATES AND FLUID PROPERTIES			Water Production		
	BOTTOM HOLE	Temp	Pressure	Tg temp	Tg press.	Cg press.	Temp.	Press	OIL OR CONDENSATE	GAS	GOR	Cumulative
HRS/MIN	MIN			OF	PSIG			Rate	Gravity	Rate	Gravity	Units
15:05									Air=1			
15:10	30			44	407							
15:15	35				498							
15:20	40				583							
15:25	45			44	656							
15:45	60				850							
15:55	75				1005							
16:10	90			45	1120							
16:25	105				1220							
16:40	120				1300							
16:55	135			45	1373							
17:10	150				1420							
17:25	165				1469							
17:40	180				1509							
17:55	195			45	1545							
17:58	198				1550							
17:58	-			Opened well through a 24/64" adjustable choke,								
17:58	0				<50							

gradually increasing to 30/64"

Out of range for D.N.T.

FLOPETROL

DIVISION : NSD

BASE : NOB

REPORT N° : 82/2301/24

Well Testing Report Annexes —

Client : PPCoN Norway

Field : Tommeliten

Well : 1/9-6

Zone :

Date : 14.08.82 - 08.09.82

DST No. 1

INDEX of ANNEXES

- 1** - BOTTOM HOLE PRESSURE AND TEMPERATURE MEASUREMENT -
 - 1.1 - B. H. guge calibration -
 - 1.2 - B. H. pressure calculation -
 - 1.3 - B. H. temperature calculation -

- 2** - LIQUID PRODUCTION RATE MEASUREMENT -
 - 2.1 - Measurements with tank -
 - 2.2 - Measurements with meter -

- 3** - GAS PRODUCTION RATE MEASUREMENT -

- 4** - SAMPLING SHEETS -
 - 4.1 - Bottom hole sampling -
 - 4.2 - Surface sampling -

- 5** - CHARTS AND MISCELLANEOUS -

LIQUID PRODUCTION RATE MEASUREMENT2.1 - MEASUREMENT WITH TANK -

$$V_o = V \times K \times (1 - BSW)$$

V_o : Net oil volume at 60°F and atmospheric pressure.

V : Gross oil volume measured by tank gauging.

K : Volume correction factor to be applied between the tank temperature during gauging and 60°F.

BSW: Basic sediments and water.

2.2 - MEASUREMENT WITH METER -

a) Shrinkage factor is measured by shrinkage tester.

$$V_o = V_S \times f \times (1 - Shr) \times K \times (1 - BSW)$$

V_o : Net oil volume at 60°F and atmospheric pressure.

V_S : Gross oil volume measured by meter under separator conditions.

f : Meter correction factor = $\frac{\text{Volume measured in tank}}{\text{Volume measured by meter}}$

Shr : Percentage of oil volume reduction between separator and tank conditions, reported to oil volume at separator conditions.

K : Volume correction factor to be applied between the final temperature during shrinkage measurement and 60°F.

BSW: Basic sediments and water.

b) Shrinkage factor is measured with tank.

$$V_o = V_S \times (1 - Shr') \times K \times (1 - BSW)$$

V_o, V_S, K and BSW : Same meaning as in a).

$(1 - Shr')$: Shrinkage factor including meter correction factor.

FLOPETROL

Client: PPCON

Field: Tommeliten
Well: 1/9-6

Base: N08

WATER - PRODUCTION RATE -
- MEASUREMENT WITH TANK -

Section: ANNEX **2.1**

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DATE - TIME	Interval	Gauge graduation	TANK VOLUME		STO GRAVITY		K	BSW	Net STO		Cumulative production
			Volume V	Bbls	Temp.	Grav.			Temp.	Grav.	
HRS	MIN	cm	Bbls	Bbls			%	Bbls / day	Bbls	Bbls	Units
23:10	0	40.5	10.69		DST # 1 6 September 1982						0
23:15	5	49	12.94		Open up for initial flow through 8/64" adjustable choke.		Increase gradually				2.25
23:20	5	51.5	13.60		24/64" adjustable choke						2.91
23:25	5	52.5	13.86		128/64" fixed choke						3.17
23:25					Close in at choke manifold for initial build up.						
07:09.82											
07:15					Open up for main-flow on 8/64" adj. choke.						
07:15	0	52.5	13.86		Increase gradually to 128/64".						
07:20	5	58.0	15.31		128/64" adj. choke						4.62
07:30	10	58.0	15.31								4.62
07:45	15	59.0	15.58								4.89
08:00	15	59.5	15.71								5.02
08:30	30	60.5	15.97								5.28

TESTED INTERVAL: 12,374' - 12,391'
PERFORATIONS

1 cm = 0.264 Bbls

FLOPETROL

MEASUREMENT WITH TANK - (Continuation)

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82/2301/24

Section: ANNEX 2.1

DATE - TIME	Interval MIN	Gauge graduation cm	TANK VOLUME		STO GRAVITY		K	BSW %	Net volume of STO V _o Bbls	Net STO product. rate /day	Cumulative production Bbls	Units
			Volume V Bbls	Temp.	Gravity	Temp. Grav. 60°F						
07:09:82		60.5										
09:00	30	62.5	16.50					0.53			5.81	
09:30	30	66.0	17.42					0.92			6.73	
09:46	16	67.0	17.69					0.27			7.00	
09:46	-	Shut in well at choke	manifld									
12:33	-	Opened well through 12/64"										
12:38	5	71.3	18.83					1.14			8.14	
12:43	5	73.5	19.40					0.57			8.71	
12:43	-	Shut in well at choke	manifld									
14:35	-	Opened well through 14/64"										
14:40	5	78.5	20.72					1.32			10.03	
14:40	-	Shut in well at choke	manifld									
17:58	-	Opened well through 14/64"										
18:03	5	83.5	22.04					1.32			11.35	
18:08	5	83.5	22.04					0			11.35	
18:13	5	84.0	22.18					0.14			11.49	
18:18	5	84.0	22.18					0			11.49	
18:23	5	84.5	22.31					0.13			11.62	

FLOPETROL

MEASUREMENT WITH TANK - (Continuation)

DATE - TIME	Interval	Gauge graduation	TANK VOLUME		STO GRAVITY		K	BSW %	Net volume of STO V _o Bbls	Net STO product rate /day	Cumulative production Bbls	Units
			Volume V Bbls	Temp.	Gravity	Temp.						
07:09.82	MIN	84.5										
18:30	7	84.5	22.31					0			11.62	
18:40	10	85.0	22.44					0.13			11.75	
18:50	10	86.0	22.70					0.26			12.01	
19:00	10	87.0	22.97					0.27			12.28	
19:10	10	87.5	23.10					0.13			12.41	
19:20	10	88.0	23.23					0.13			12.54	
19:30	10	89.0	23.50					0.27			12.81	
19:30	-	Closed EZ-Tree and lubricator										
19:40	-	Samplers in lubricator										
19:50	-	Closed failsafe wing valve										
19:51	-	Open EZ-Tree and lubricator										
20:00	-	RIH with samplers										
20:05	-	Open failsafe wing valve. Flow well on 30/64" adj. choke										
20:15	10	95	25.08					1.58			14.39	
20:30	15	96.5	25.48					0.40			14.79	
20:45	15	98.0	25.87					0.79			15.58	
21:00	15	100.0	26.40					0.53			16.11	

FLOPETROL

MEASUREMENT WITH TANK - (Continuation)

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Report No: 82/230124

Section : Annex

2.1

Date - Time		Gauge graduation cm	Tank volume		Sto Gravity		K	BSW %	Net volume of STO Vo Bbl	Net STO product. rate Bbl/day	Cumulative production Bbl	Units
Time HRS	Interval min.		Volume V Bbl	Temp. °F	Gravity °API	Temp. °F						
21:00		100										
21:15	15	101.0	26.66					0.26			16.37	
21:30	15	102.0	26.93					0.27			16.64	
21:45	15	102.0	26.93					.00			16.64	
22:00	15	103.0	27.20					0.27			16.91	
22:15	15	104.0	27.45					0.25			17.16	
22:30	15	104.5	27.59					0.14			17.30	
22:45	15	106.0	27.98					0.39			17.69	
23:00	15	106.5	28.11					0.13			17.82	
23:15	15	107.0	28.25					0.14			17.96	
23:30	15	108.0	28.51					0.26			18.22	
23:45	15	108.5	28.64					0.13			18.35	
24:00	15	109.0	28.77					0.13			18.48	
00:15	15	109.4	28.87					0.11			18.59	
00:30	15	109.7	28.95					0.08			18.67	
00:31			Closed lubricator									
04:30			Open choke on 128/64" adj. choke									
05:00	30	109.7	28.95					-			18.67	

THIS CHART IS TO BE USED IN

5 A.M.

6 DAY

TRACKMARKS - HUMITEX NO 69166

7 A.M.

8 A.M.

9 A.M.

10 A.M.

1 P.M.

2 P.M.

3 P.M.

4 P.M.

5 P.M.

6 P.M.

BRIGHT

M

Q

2

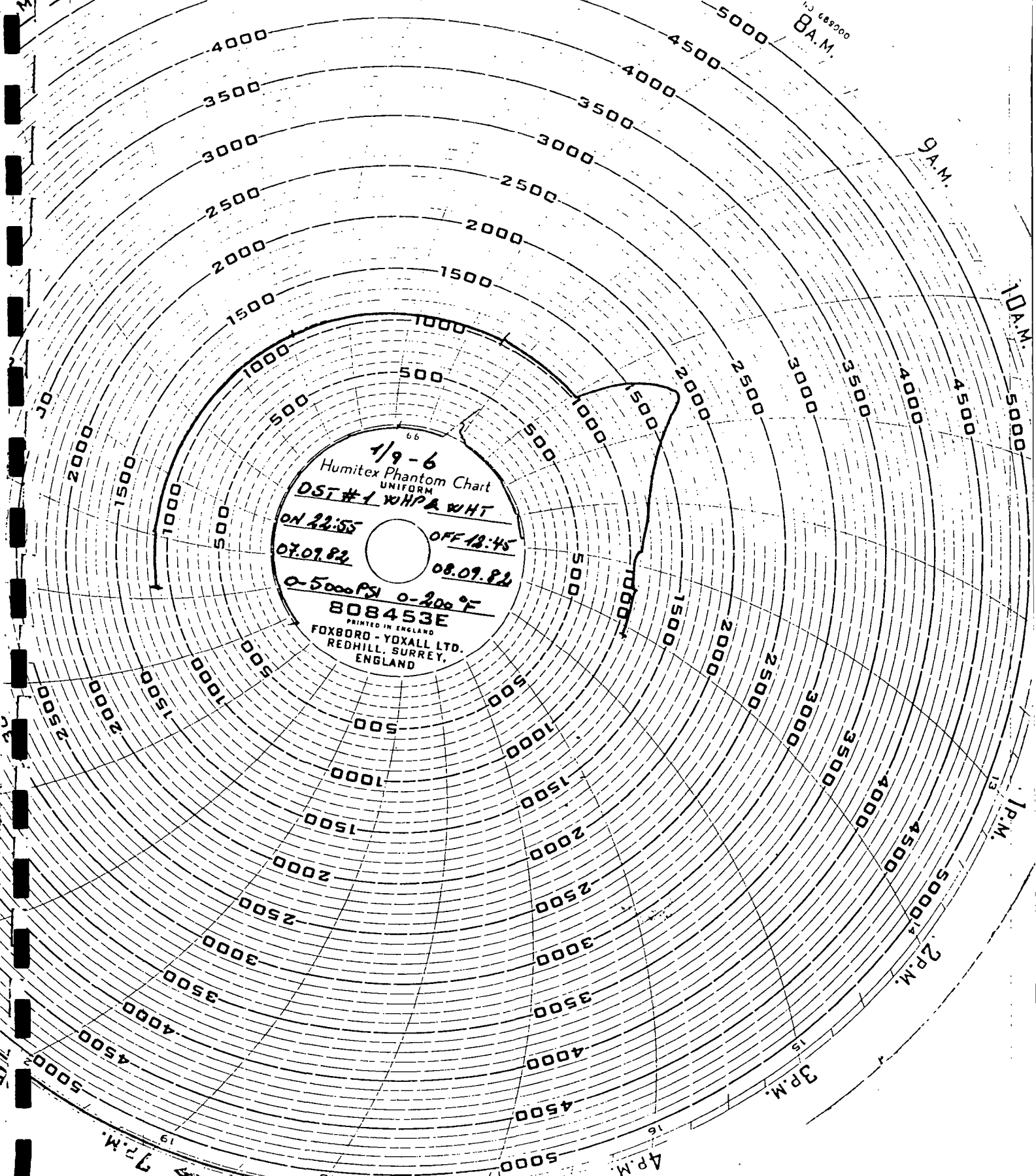
7

18

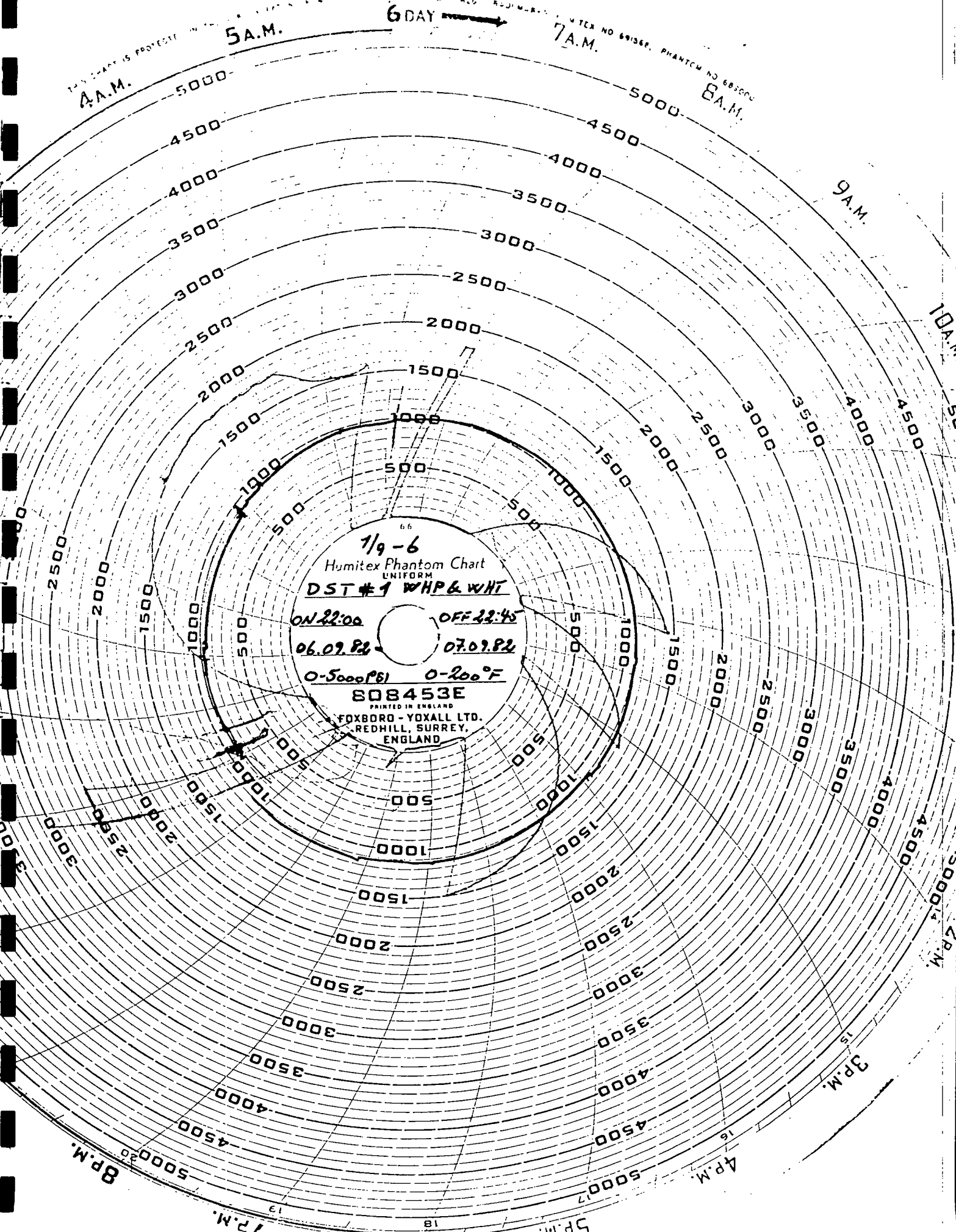
19

20

21



4 A.M. 5 A.M. 6 DAY 7 A.M. 8 A.M. 9 A.M. 10 A.M. 11 A.M.

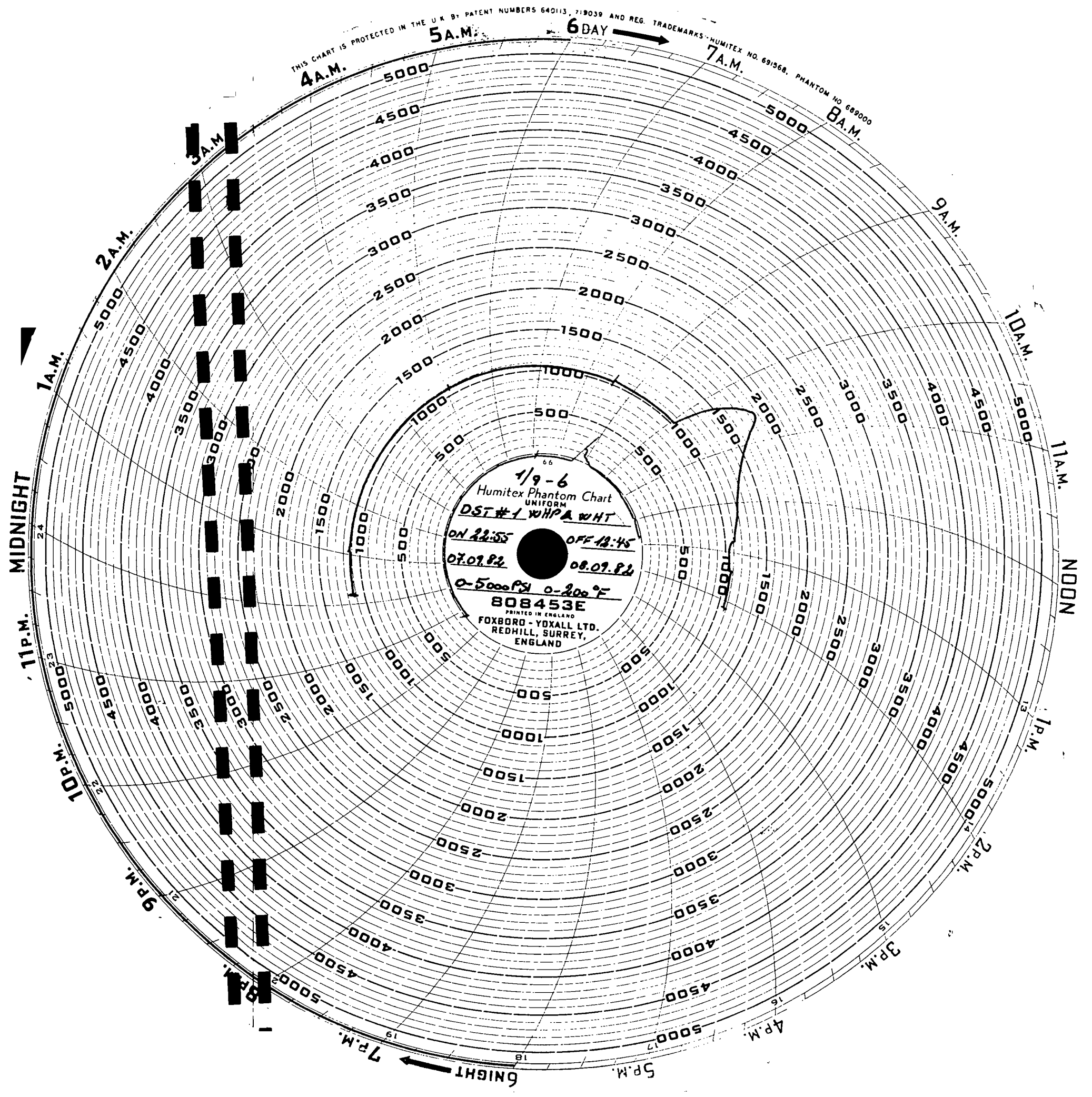


6.6
1/9-6
Humitex Phantom Chart
UNIFORM
DST #1 WHP & WHT
ON 22:00 OFF 22:45
06.09.82 07.09.82
0-5000 hPa 0-200°F

808453E
PRINTED IN ENGLAND
FOXBORO - YOXALL LTD.
REDHILL, SURREY,
ENGLAND

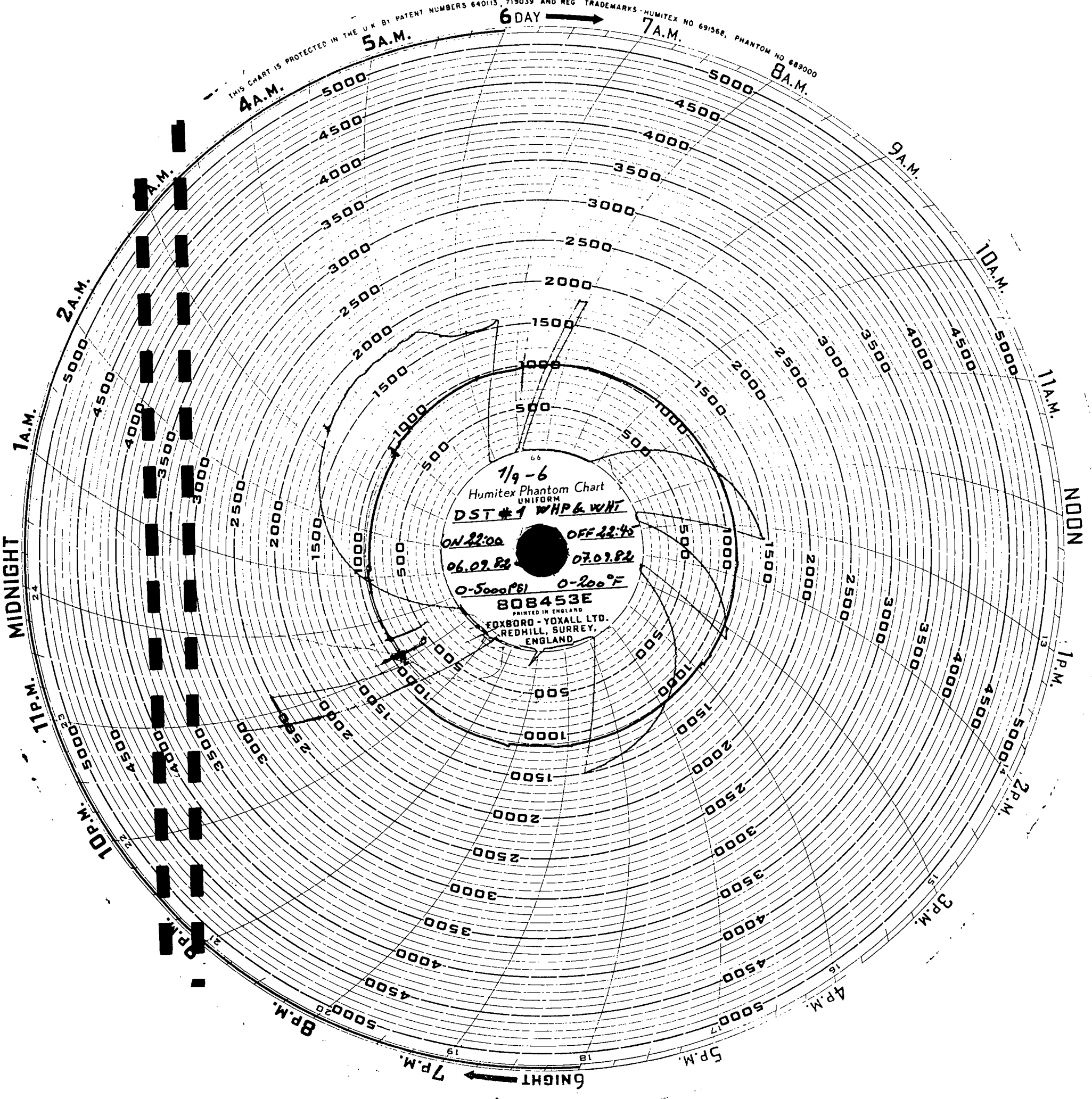
12 P.M. 1 P.M. 2 P.M. 3 P.M. 4 P.M. 5 P.M. 6 P.M. 7 P.M. 8 P.M. 9 P.M. 10 P.M. 11 P.M.

THIS CHART IS PROTECTED IN THE U.K. BY PATENT NUMBERS 640113, 719039 AND REG. TRADEMARKS HUMITEX NO. 691568, PHANTOM NO. 689000



THIS CHART IS PROTECTED IN THE U.K. BY PATENT NUMBERS 640113, 719039 AND REG. TRADEMARKS - HUMITEX NO 69156E, PHANTOM NO 689000

6 DAY →



4 A.M.

5 A.M.

7 A.M.

8 A.M.

9 A.M.

10 A.M.

11 A.M.

NOON

1 P.M.

2 P.M.

3 P.M.

4 P.M.

5 P.M.

← 6 NIGHT

8 P.M.

10 P.M.

11 P.M.

MIDNIGHT

1 A.M.

2 A.M.

3 A.M.